Amendments to the claims:

Claims 1-19 (Cancelled).

20. (Currently Amended) A displacement sensor having a configuration in which an output changes corresponding to a change in the relative position to an object to be detected and which detects a proximity position in relation to said object to be detected based on the change in said output ~~wherein~~ , said displacement sensor comprising:

a core body including a core center portion and first and second core end portions that are continuously formed on both sides of the core center portion;

one or more magnetizing coils and one or more detecting coils ~~are~~ wound around ~~a~~ said core body such that they are lined on the axis of said core body;

one ~~end of each~~ of said magnetizing coils and said detecting coils ~~are~~ being placed at ~~a~~ said core center portion at the approximate center of said core body in the axial direction ~~while the other ends of~~ , the other of said magnetizing coils and said detecting coils ~~are~~ being placed at a pair of said core end portions ~~at each end~~ of said core body in the axial direction; and

the axial direction of said core body ~~is~~ being arranged to be approximately equal to the direction of a change in the relative position in relation to said object to be detected such that one of said core end portions and said object to be detected face each other when said object to be detected approaches and retreats from said core end portion;

wherein the width of said pair of said core end portions in the direction perpendicular to the axial direction is substantially the same and is smaller than the width of the core center portion.

21. (Original) A displacement sensor according to Claim 20, wherein said core body is formed of a piece of a plate.

22. (Cancelled)

23. (Original) A displacement sensor according to Claim 20, wherein said magnetizing coils have a pair of wound portions which are positioned such that opposed magnetic fields are generated on said axis of said core body.

Claims 24-27 (Cancelled).

28. (New) A displacement sensor having a configuration in which an output changes corresponding to a change in the relative position to an object to be sensed and which detects a proximity position in relation to the object based on the output change, the displacement sensor comprising:

a core body including a core center portion and first and second core end portions that are continuously formed on both sides of the core center portion;

first and second magnetizing coils respectively wound around the first and second core end portions;

a detecting coil wound around the core center portion such that the first and second magnetizing coils and the detecting coil all are lined on an axis of the core body;

the axial direction of the core body being arranged to be approximately equal to the direction of a change in the relative position in relation to the object such that one of the core end portions and the object face each other when the object approaches and retreats from the one core end portion;

wherein the width of the core end portions is smaller than the width of the core center portion.

29. (New) The displacement sensor according to Claim 28, wherein the core body is formed of a piece of a plate.

30. (New) The displacement sensor according to Claim 28, wherein the first and second magnetizing coils are connected in series such that opposed magnetic fields are generated on the axis of the core body.

31. (New) The displacement sensor according to Claim 28, further comprising a differential amplifier connected to the two ends of the detecting coil.

32. (New) The displacement sensor according to Claim 28, wherein the two ends of the detecting coil define a differential output for detection of the object position.